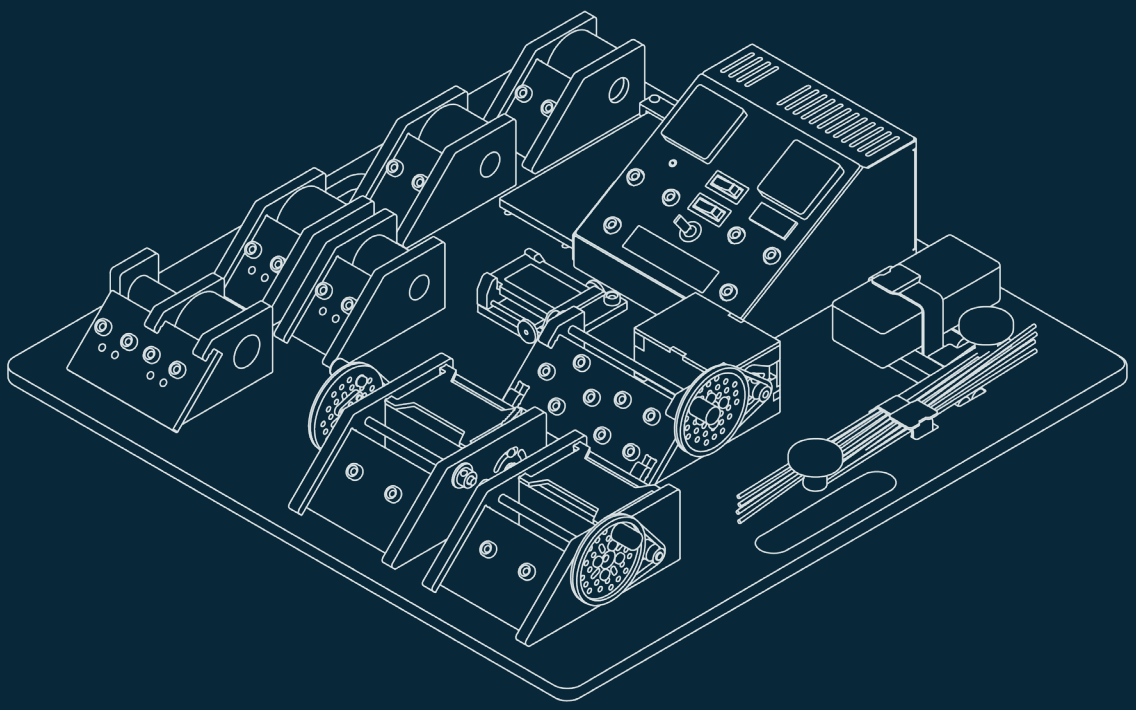
CL-1902_053242

# Electromagnetism trainer



Rev. 2023/08

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Electromagnetism trainer

CONSULAB

**The ConsuLab CL-1902 Electromagnetism trainer is designed for your students to physically demonstrate, test, measure, and experience electromagnetism using a "hands-on" approach to learning. Many aspects of a modern vehicle, whether a car, truck, combustion powered, hybrid or electrically driven, depend on some form of electromagnetism. Demonstrate, visualize and experience hands-on the principles of electromagnetism as applied to modern vehicles. Students will prove their learning through a series of self-paced student exercises and experiments while they practice and demonstrate basic principles of electro-magnetism.**

## PHYSICAL CONFIGURATION

- The product is designed to be used individually per student
- Reverse polarity switch and polarity indicators on power supply
- Configured with 4mm sockets throughout for student circuit construction
- 22″ x 22″ (compatible ConsuLab format EM-200 series cabinets)
- Circuit construction wires (2 red and 2 black jumper wires included)
- Powered by CSA/UL approved power supply
- Includes measurement instrumentation:
  - System voltage with analog voltmeter
  - System amperage with analog ammeter
  - Student wired bicolor LEDs for polarity
  - Student wired galvanometer (micro-ammeter) for current direction and strength
- Includes a compass, magnetic field indicator, 3″ bar magnet, 5″ ferrous rod and 5″ non-ferrous rod

## SAFETY

- All components are protected from electrical damage due to incorrect or short-circuit wiring
- Robust, student-resistant design

## TIME

- Minimal setup time, under 5 minutes to be ready for use
- Easy to inventory all included components
- Provided student exercises and experiments guide students through learning process
- Up to 50+ hours of instructional time depending on individual instructor preferences
- ALL individual components have a storage place on each trainer

## TYPE OF ACTIVITIES TO BE DONE WITH TRAINER

### Physical Experiments

- Visualizing magnetic fields
- Feeling the attraction and repel of magnetic fields
- Visualizing mutual induction
- Demonstrating operating principles of relays and solenoids

### Electrical measurements possible

- Ohmmeter
- Ammeter
- Voltmeter
- Oscilloscopes

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**EDUCATIONAL SUPPORT MATERIALS**

- Operation manual
- Student assignments
- Instructor's manual
- How-to video
- After the sale product training available

**MODULE A**

- Two identical coils with different winding directions and hollow cores
- Demonstrates basic magnetic fields, electromagnet function, solenoid function using magnetic fields to generate AC current
- Experiments with bar magnets, steel, and aluminum rods

**MODULE B**

- Two coils with different number of turns and hollow cores
- Demonstrates induction from one coil to another
- Demonstrates effects of number of turns on electromagnetic strength
- Includes red and green polarity indicator LED's

**MODULE C**

- Two coils one inside the other with permanent multi rod coil iron core
- Inner coil is movable for different demonstration applications
- Demonstrates induction from one coil to another like ignition coil
- Demonstrates "step-up" and "step-down" transformer (coil) operation
- Includes red and green polarity indicator LED's

**MODULE D**

- Physical manifestation of the right-hand rule

**MODULE E**

- AC generator with permanent magnet rotor and coil stator
- Single diode for demonstration of half-wave rectification
- Full 4-diode rectifier bridge for demonstration of full-wave rectification

**MODULE F**

- Two brushed DC electric motors that can be used as motor or generator
- Motors can be coupled together
- Motor brush timing can be adjusted on one motor

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**INCLUDED EQUIPMENT**

- Magnetic field demonstrator
- AC/DC wall mount adapter 48W
- 8 cm (3 in) x 1.25 cm (½ po) permanent magnet rod
- 12 cm (5 in), x 1.25 cm (½ po) aluminum rod
- 12 cm (5 in), x 1.25 cm (½ po) steel rod
- 2 x 75 cm (32 in) red jumper leads
- 2 x 75 cm (32 in) black jumper leads
- Compass

**OPTIONAL EQUIPMENT**

- Multi-unit (up to 16) storage and transport case
- Single unit storage and transport case

**TECHNICAL INFORMATION**

- Dimensions : 56 cm (22 in) W x 56 cm (22 in) L x 13 cm (5.25 in) H / 61 x 61 x 33 cm (24 x 24 x 13 in) with packaging.
- Weight : 12.7 kg (28 lbs) / 13.6 kg (30 lbs) with packaging.
- Power supply : 120VAC 60HZ 1.3A

Scan this QR code for more about this product

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